III. REMARKS

In the Office Action, objections were made to claims 1, 4-7, 9-12, 15, 18-21 and 23-26. Amendments are made to the claims to overcome the objections.

Claims 1-3 and 15-17 were rejected under 35 U.S.C. 103 as being unpatentable over Kakura (US 6754263) in view of Parr (US 5872816) for reasons set forth in the Office Action. Claims 4-9, 12-14 and 18-26 were rejected under 35 U.S.C. 103 as being unpatentable over Kakura in view of Parr and further in view of Kubo (US 6556632) for reasons set forth in the Action. Claims 10-11 and 24-25 were rejected under 35 U.S.C. 103 as being unpatentable over Kakura in view of Parr and further in view of Yoshino (US 5537443) for reasons set forth in the Action.

The following argument is presented to overcome the rejections under 35 U.S.C. 103 and to show the presence of allowable subject matter in the claims, as amended.

The teachings of Kakura, which is the primary reference, and Parr are distinguished from the present invention by the following analysis.

Kakura discloses an automatic channel equalizer that can suppress errors in code decisions (abstract). In the automatic channel equalizer, survivor paths are constrained based on the regularity of a used code (column 1 lines 5 to 11).

In Figure 1, reference numeral 101 is a received signal estimation circuit that inputs k^M series of candidate signals S_{can}, that are combinations of transmitted code having an M chip

length and k levels, and a transmission channel impulse response h having a length M. Output of the received signal estimation circuit is k^M estimated received signals S_{er}.

In the subtracter 102, k^M estimated error signals S_{err} are generated by subtracting each of the k^M estimated received signals S_{er} from a received signal S_r.

The k^M estimated error signals S_{err} are conveyed to a path metric calculation circuit. The path metric calculation circuit 104 squares the absolute value of the k^M estimated error signals S_{err}, corresponding to the k^{M-1} survivor path metric signals S_{pmsv}, and generates k^M path metric signals S_{pm}. The generated k^M path metric signals S_{pm} are output to the survivor path selection circuit 105.

The survivor path selection circuit selects among the k^M path metric signals S_{pm}, those for which the state transitions in the trellis diagram satisfy the constraint condition and whose values for the path metric signals S_{pm} are minimal. Viterbi calculation circuit is formed by the circuits 104 and 105 (column 8 at line 42 to column 9 at line 22, Figure 1).

Kakura does not disclose or suggest the idea of the present invention that a reference signal using at least one impulse response value and a symbol sequence assumed as transmitted is determined, and wherein differential terms corresponding to the selected impulse response values for a signal sample and the reference signal are determined, and the determined differential terms are applied to a symbol sequence transition metric for searching for a symbol sequence.

Kakura teaches that candidate signals in a received signal estimation circuit are the combinations of a transmitted code. Kakura also teaches that error signals are generated by subtracting estimated received signals from a signal actually received. The goal of Kakura is to suppress errors in code decisions.

Parr discloses a system and method of blind channel estimation (abstract). Parr teaches that a received signal is digitized by an analog-to-digital converter 58 and then segmented into groups of contiguous samples within each burst (column 5 lines 18 to 21).

Then, the channel determination/error module 60 determines, for each of the groups, the "best" thirty-two estimates of the phase and amplitude distortions of the channel from among the 1024 estimates for each of the groups. The selection is based on a statistic generated by determining differences between the hypothesized data having been passed through the estimated channel, and the symbols actually received (column 5 at lines 44 to 55, Figure 3). The "best" thirty-two estimates 62 (Figure 4) of the phase and amplitude distortions of the channel are selected (Block 1008 in Figure 7, column 8 at lines 34 to 44). One "best" estimate for each group is identified. The selection is based on an assumption that one "best" estimate for each group is similar to the one "best" estimates selected for adjacent groups. The one "best" estimate is selected by using a trellis (column 8 lines 51 to 59).

Parr does not disclose or suggest that at least one of the highest and/or most reliable impulse response values are selected and a reference signal is determined using the at least

one impulse response value and a symbol sequence assumed as transmitted.

Parr teaches that a received signal is digitized by an analog-to-digital converter and then segmented into groups of contiguous samples within each burst. Parr also teaches that for each of the groups, the "best" estimates of the phase and amplitude distortions of the channel are determined.

Upon comparing the teachings of Kakura and Parr, it is noted that Kakura discloses an automatic channel equalizer that can suppress errors in code decisions. Parr discloses a method to determine phase and amplitude distortions introduced by a channel. Thus the teachings of Kakura and Parr are in different fields of technology. There is no suggestion in Kakura for a determination of phase and amplitude distortions, and thus a skilled person in the art would not have had motivation to combine Kakura and Parr. Even if a skilled person had made such a combination, he would not have attained the present invention, bsed on the analysis presented above.

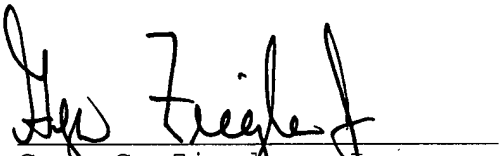
Both Kubo and Yoshino were discussed in the prior response, and their teachings were differentiated from the subject matter of the present claims. Combining their teachings with Kakura and Parr, as in the present rejections, does not alter the foregoing argument. Therefore, it is believed that this argument overcomes the grounds of rejection, and shows the presence of allowable subject matter in the claims.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and

are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

A check in the amount of $400.00 is enclosed for the additional claim fees. The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,



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